(No Model.) 3 Sheets—Sheet 1.

P. BROWN.

TANK CAR.

No. 588,742. Patented Aug. 24, 1897.

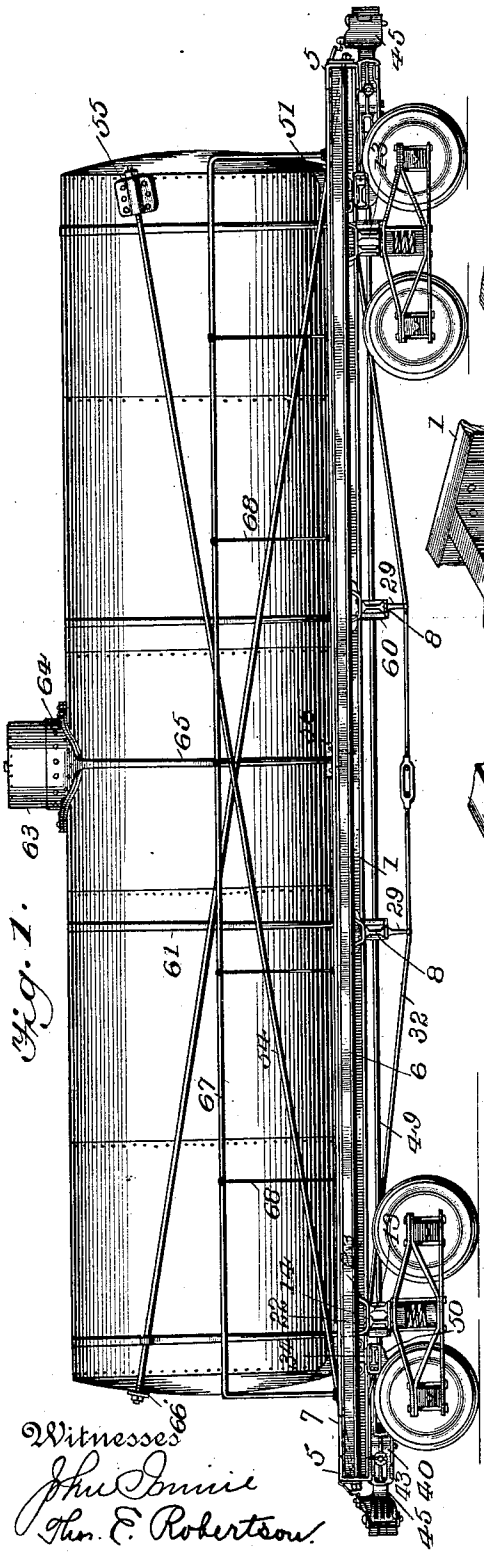


Fig. 1.

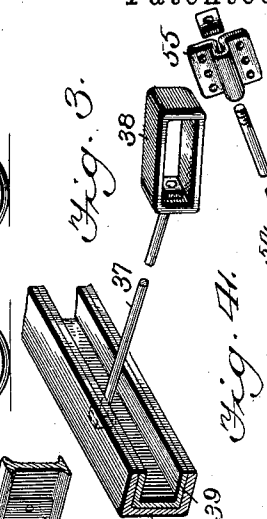


Fig. 3.

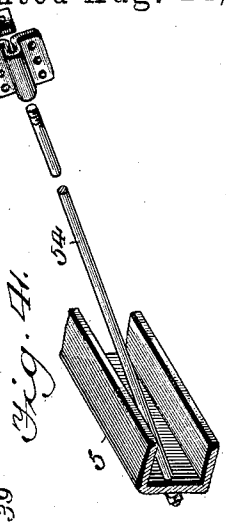


Fig. 4.

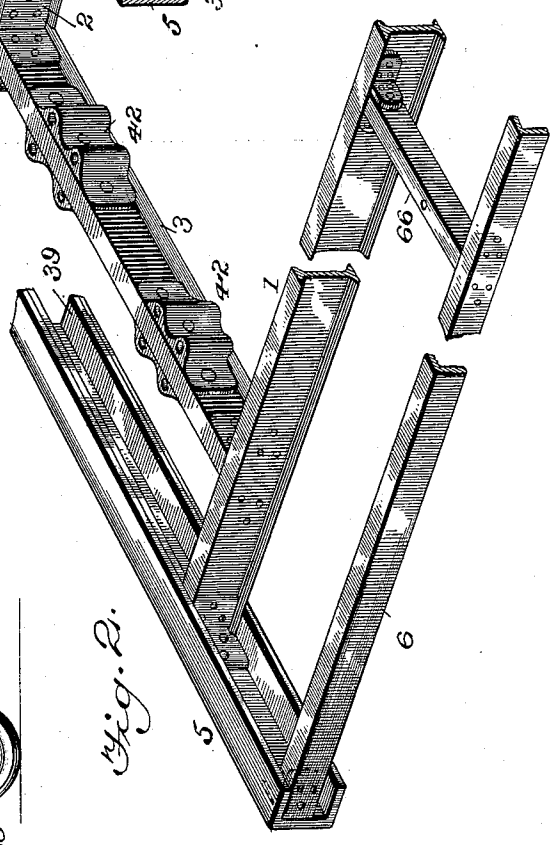


Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

P. BROWN.

TANK CAR.

No. 588,742. Patented Aug. 24, 1897.

Fig. 13.

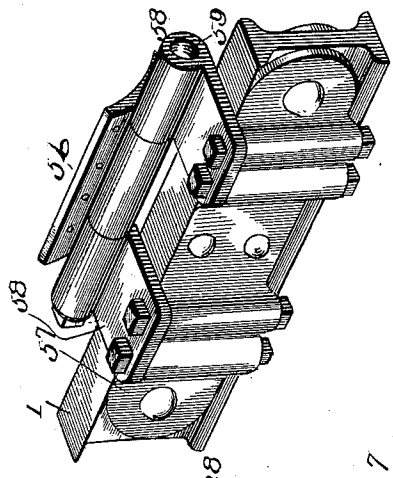


Fig. 7.

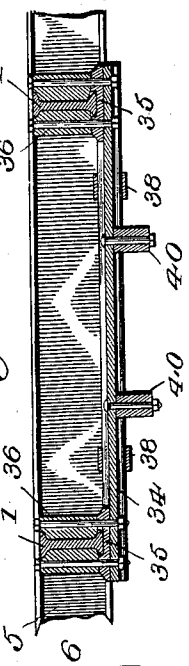


Fig. 5.

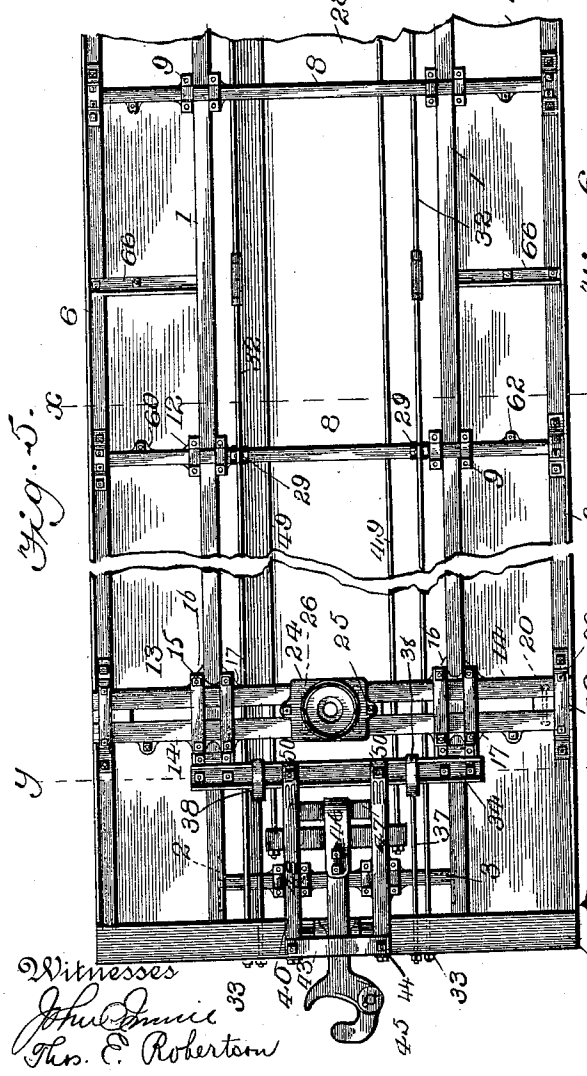
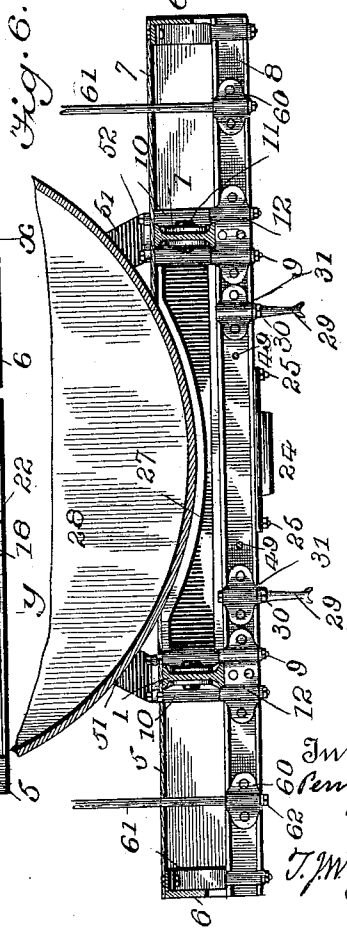


Fig. 6.



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P. BROWN.

TANK CAR.

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Fig. 8.

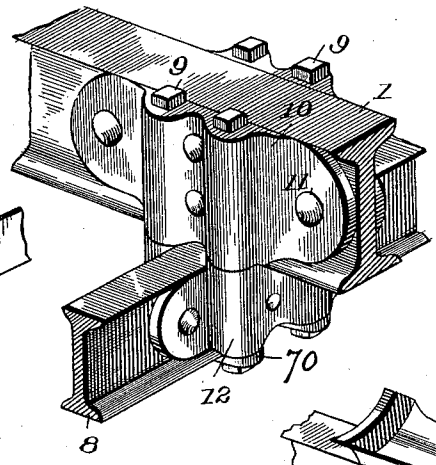


Fig. 9.

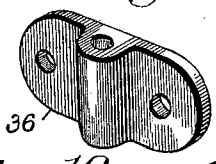


Fig. 10.

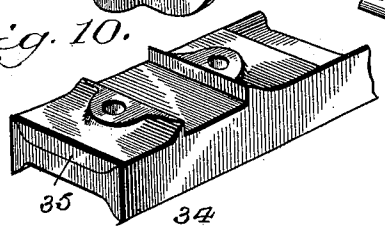


Fig. 11.

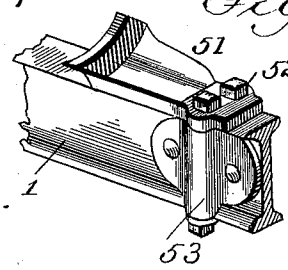


Fig. 12.

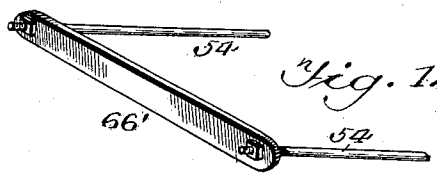


Fig. 14.

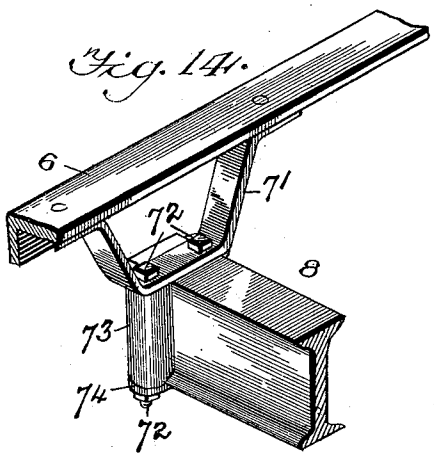


Fig. 15.

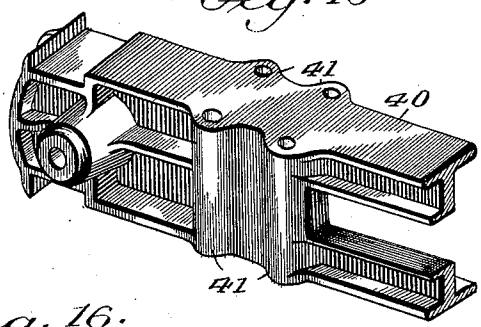
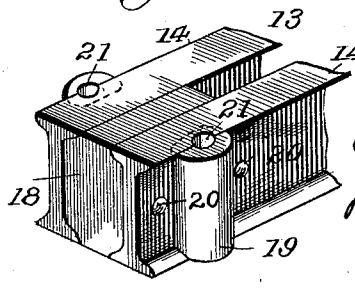


Fig. 16.



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UNITED STATES PATENT OFFICE.

PERRY BROWN, OF WILMINGTON, DELAWARE.

TANK-CAR.

SPECIFICATION forming part of Letters Patent No. 588,742, dated August 24, 1897.

Application filed November 7, 1896. Serial No. 611,361. (No model.)

To all whom it may concern:

Be it known that I, PERRY BROWN, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented a certain new and useful Improvement in Tank-Cars, of which the following is a specification, reference being had to the accompanying drawings.

This improvement is designed to provide a tank-car which will be free from the liability to break up the timbers or batter and break open the ends of the tank, or both, as is commonly the case with the style of cars usually employed; and the invention consists in the peculiar construction, arrangements, and combinations of parts hereinafter more particularly described, and then definitely claimed.

In the accompanying drawings, Figure 1 is a side view of a car constructed according to my improvement. Figs. 2, 3, and 4 are perspective details, which will be further described hereinafter. Fig. 5 is a reversed plan of the floor of the car. Fig. 6 is a vertical cross-section through the line *x x*, Fig. 5. Fig. 7 is a similar section through the line *y y*, same figure. Figs. 8 to 16 are perspective details, to be hereinafter more particularly described.

Referring to the details of the drawings by figures, 1 1 indicate two pieces of channel-iron, forming the longitudinal sills, between which are secured by angle-irons 2 (see Fig. 2) other channel-irons, forming cross-sills 3, and at the extreme ends of said longitudinal sills are secured the end sills 5, preferably formed of C-shaped iron, and which extend outward to receive outer sills 6, of angle-iron, which are intended mainly to support the runway 7, which I prefer to make of heavy sheet-iron. Below these sills are secured channel-iron needle-bars 8 by means of bolts 9, (see Fig. 8,) which pass through holes in castings 10, secured by rivets 11 to the sills 1, and similar castings 12, riveted to the needle-bars 8, and also through tie-plates 70, set below the said needle-bars. On the ends of said needle-bars 8 are set standards 71, which are secured by bolts 72, passing through castings 73, fitted to the sides of said needle-bars, and through tie-plates 74, passing under the same.

The bolsters 13 are formed of pieces of channel-iron 14, fastened beneath and to the sills 1 by bolts 15, which pass through castings 16 and 17, riveted to the sills and needle-bars substantially in the manner shown in Fig. 8. Between the ends of these channel-irons are secured (see Fig. 16) castings 18, fitting the space between the former, which are held there by bolts 20, passing through said castings and the channel-irons, so that said castings and channel-irons are so secured together as to form in effect one solid piece. Other castings 19 are fitted to the outer sides of the channel-irons and are provided with holes 21, through which and through standards 23, supporting the channel-iron 6, and also through tie-plates passing under the channel-irons 14, are passed bolts 22, which secure said standards upon the channel-irons 14. Beneath these channel-irons is secured the bolster-plate 24 by bolts 25, passing through a casting (not shown, but similar to that indicated at 18) set between the channel-irons and which is secured in place by bolts 26, passing through both channel-irons and castings.

Resting on the bolsters and needle-bars are cradles 27, having their ends secured to the longitudinal sills 1 and having their upper surfaces or flanges curved to fit the bottom of the tank 28.

To the lower sides of the needle-bar 8 the truss-stands 29 are secured by bolts 30, which pass through the said stands and the castings 31, attached to the side of the needle-bar. Beneath these stands 29 are set truss-rods 32, which pass upward and over the bolster and through the end sills 5, where they are secured by nuts 33.

The number 34 indicates a piece of channel-iron, forming a buffing-bar, which is secured flatwise beneath the sills 1 by bolts passing through the same, through castings 35, (see Fig. 10,) secured to said channel-iron, and through other castings 36, (shown in Fig. 9,) secured to the sills 1. This buffing-bar is connected to the end sill by a bolt 37, which passes through said sill and through a loop 38 (see Figs. 3 and 5) surrounding the buffing-bar.

To further strengthen the end sill, a bar 39 of similar shape, but slightly smaller, is set

in the channel of said end sill, and the bolt 37 passes through said bar also.

At 40 are shown two draft-irons, which are partly shown in the perspective detail Fig. 15. These are provided with projections 41 on each side, which are perforated to receive bolts that also pass through the holes in the castings 42, (see Fig. 2,) riveted to the sides of the cross-sills 3. Beneath these draft-irons is set a stirrup 43, which is secured by bolts 44, passing through said stirrup. At 45 is a coupling, which may be of any suitable kind, but preferably such as is shown in my Patent No. 515,044, provided with a yoke 46, which passes around a follower-bar 47. In front of this bar is another follower-bar 48, to which are connected draft-rods 49, that pass back to the coupling on the opposite end of the car.

The rear ends of the draft-irons 40 are provided with lips 50, which extend under the buffing-bar 34, and are secured to the same by bolts passing through said lips 50 and the bar 34. The lip may be cast to fit the channel on the under side of the buffing-bar, or a small casting may be set between the lip and the buffing-bar to fill the channel.

The tank may be of the ordinary or any suitable kind and rests on the cradles before referred to. The great trouble with the tanks usually employed is to keep them rigidly in place. In order to do this, I provide several means of securing them in position.

The numeral 51 (see Figs. 6 and 11) indicates a clamp which is secured to the framework of the car by bolts 52, which pass through the clamp and through castings 53, secured to the sills 1. The free ends of these clamps come in close contact with the chime of the tank and to a considerable extent prevent any endwise motion; but to further prevent the same I use tie-bolts 54, which pass through ears 55, secured to the sides of the tank, and whose other ends pass through the end sills and are provided with nuts, by screwing up which the upper part of the tank is not only strengthened, but held firmly in place. In addition to this I rivet to the lower sides of the tank a large wrought-iron ear 56 and rivet on the sills 1 castings 57, to which are bolted cast ears 58. Through these ears are set bolts 59, which will not only prevent the tank from moving endwise, but will also serve to prevent the tank turning on its axis.

On the needles and the bolsters are secured castings 60, (see Fig. 6,) which are perforated vertically to receive the ends of the straps 61, which pass over the top of the tank and down through the holes in said castings, where they are secured by nuts 62, by turning which the straps are tightly drawn down upon and around the top and sides of the tank to secure the same in place on the sills 1.

Around the manhole 63 is set a ring 64, having straps 65 welded thereto, which pass down on each side of the tank, and each passes through the horizontal flange of a piece of angle-iron 66, running crosswise of the car between the main sill 1 and the outer sill 6, to both of which it is securely bolted or riveted. Ordinary nuts on the ends of these straps 65 keep them under strain, so that they also serve to prevent the tank turning.

In some cases instead of using the ears 55 I use bars 66, (see Fig. 12,) extending across the ends of the tank and having holes in their ends through which the bolts 54 may pass. This will be found convenient where old tanks are used, as it will save the trouble of boring them to receive the rivets for the ears 55.

Along the side of the car is a hand-rail 67, which is supported by standards 68, each having a flange on the bottom, which rests on the outer sill 6 and passes through the horizontal flange thereof, where it is secured by a nut.

Although I show and prefer to use my invention as a whole, yet it is evident that parts thereof may be used independently. It is also evident that shorter tie-rods may be used by setting the ears at or near the center of the length of the tank.

I have shown several different forms of castings used to fill in the space in the sides of the channel-iron and adapted to receive the bolts used to clamp the channel-irons together and which I propose to give the general name of "fittings," as they fit into the channel-iron, but do not propose to limit myself to castings, as in some cases they may be made of other material. These fittings I consider an important part of my invention in carrying it out practically, for if, as has been proposed, the bolts are set through the head and foot of the channel-irons the strength of the same is much impaired, whereas the fittings I use, as they fit snugly in place, help to strengthen the rail and more than counteract the small amount that the channel-irons are weakened by the rivet-holes securing the fittings to them.

Although I show and prefer the double channel-irons shown, yet it is evident that irons with a single channel, substantially such as is used for the end sill 5, may be employed, if preferred, in most of the places where I have shown double channel-iron.

What I claim as new is—

1. A car having a frame of channel-irons united at their crossings by fittings set in the channels of the irons and having projections extending beyond the flanges of the irons and holes through said projections, and the whole united by bolts passing through said projections, substantially as described.

2. A car having a frame of channel-iron longitudinal sills, needle-bars set at right angles thereto, fittings secured to the sides of the sills and needle-bars and having projections extending outside of the flanges of the channel-iron, and bolts passing through said fittings outside of said flanges, substantially as described.

3. A frame for a car, comprising longitudi-

nal channel-iron sills 1, cross-sills 3, end sills 5, outer side sills 6, fittings secured to the sides of the irons, having perforated projections extending outside the flanges thereof and bolts coupling the fittings together, substantially as described.

4. A car-bolster comprising the channel-irons 14, castings as 18 set between the channel-irons, bolts passing through both of the channel-irons and castings and a bolster-plate 24 secured in place by bolts passing between the edges of the opposite flanges of channel-irons into one of said castings, substantially as described.

5. In combination with the longitudinal sills of a car, a bolster comprising the channel-irons 14, castings as 18 set between the channel-irons, a bolster-plate 24 secured by bolts passing into the castings between the channel-irons, fittings secured to the sills and channel-irons, and bolts for securing the fittings together, substantially as described.

6. The combination in a car and with the coupler thereof, of a buffing-bar secured flatwise to the under side of the longitudinal sills in front of the bolster, the draft-irons having their ends bearing against said buffing-bar, and rods running through the end sill to said buffing-bar and firmly secured to the latter, substantially as described.

7. The combination in a car, of longitudinal and end sills, a buffing-bar set beneath the same, a channel-iron cross-sill having fittings with perforated projections attached thereto, and draft-irons having their inner ends attached to the buffing-iron and connected to said cross-sill by bolts passing through the draft-irons and the fittings on the cross-sill, and rods running from the buffing-bar to the end sill, substantially as described.

8. The combination in a car and with the coupler and draft-irons therefor, of a channel-iron buffing-bar secured flatwise to the sills of the car and connected to the end sill by bolts and loops, substantially as described.

9. The combination in a car and with the coupler therefor, of a channel-iron buffing-bar secured flatwise to the sills of the car, bolt-and-loop connections between the buffing-bar and the end sill, and the draft-irons having their opposite ends secured to the buffing-bar and the end sill, substantially as described.

10. The combination of a channel-iron cross-sill 3 of a car, having fittings 4 secured to the web of said cross-sill and provided with perforated projections extending beyond the flanges of the channel-iron, with draft-irons 40 having bolt-holes therein, and bolts passing through said bolt-holes and into the perforated projections, substantially as described.

11. The combination in a tank-car, of a frame, a tank mounted thereon, and diagonal tie-rods having one end connected to a cross-sill, and the other secured near the top of the tank and rigidly securing said tank to the frame, substantially as described.

12. The combination in a tank-car, of a frame, a tank therefor, and diagonal tie-rods, each having one end connected to the upper part of the tank near one end and having its other end passing through the end sill, and rigidly holding the tank to the frame, substantially as described

13. The combination in a tank-car and with the tank therefor, of a longitudinal channel-iron sill 1, fittings 53 secured to the web thereof having a perforated projection extending outside the flange of the sill, and a clamp 51 bolted to said fittings and bearing against the end of the tank, substantially as described.

14. The combination in a tank-car and with the tank and sills therefor, of fittings 57 secured to the web of the sills, and each having a perforated projection extending outside the flanges of the sills, the ears 56 fast on the tank, the ears 58 secured to said fittings, and bolts passing through said ears 56 and 58, substantially as described.

15. The combination in a tank-car and with the tank therefor, of a series of channel-iron cross-pieces, and a corresponding series of straps passing around the tank and having their ends passing through fittings secured to the web of said channel-iron cross-pieces and having holes for said strap ends in projections extending outside the flanges of said cross-pieces, substantially as described.

16. The combination with a longitudinal and a transverse channel-iron, of two fittings each arranged parallel with and secured to one of said channel-irons between the flanges thereof, and crossing each other, and bolts passing through said fittings to secure the channel-irons together, substantially as described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 30th day of October, 1896.

PERRY BROWN.

Witnesses:
THOS. E. ROBERTSON,
WALTER E. CLENDANIEL.